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MedBulletin

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MedBulletin

Women Less Able to Suppress Hunger

MedBulletin by Randal Desouza

When tempted bytheir favourite foods, it seems that women are less able than men to suppress their hunger, according to findings in the Proceedings of the National Academy of Sciences.

Such findings may be instrumental in explaining female obesity rates in the United States. Researchers trying to understand the brain's mechanisms for controlling food intake were surprised at the difference in brain response between the sexes.

To understand why some people overeat as opposed to others, researchers performed brain scans on men and women who had fasted the night before and then were then presented with their favourite foods.

The participants employed a technique known as cognitive inhibition, which they had been taught earlier, to suppress thoughts of hunger and eating. While male and female participants said that the inhibition technique decreased their hunger, brain scans showed that male brain activity decreased while the part of the female brain that responds to food remained active. Although the women said they were less hungry when trying to inhibit their response to food, their brains were fully active in the regions that controlled their drive to eat.

Reference:

Wang, H. (2009). Study: Women less able to suppress hunger than men. China View: Health. Retrieved http://news.xinhuanet.com/english/2009-01/22/content_10701533.htm

Is Poor Sleep Quality Linked to Postpartum Depression?

MedBulletin by Hiten Naik

It is well understood that women often suffer from sleep deprivation after giving birth. Though this is often blamed on the physical demand placed on mothers by noisy infants, poor sleep patterns can be explained by plunging estrogen and progesterone levels after childbirth. Typically, both the quantity and quality of sleep is affected. Studies have shown that a mother spends 20% more of the day awake than average during the first six postpartum weeks and spends only 81% of their total time in bed actually sleeping.

Less frequently, childbirth may also lead to postpartum depression (PPD), a psychological disorder that affects 6.5 to 13 percent of new mothers in the US, and is particularly more prevalent in women of lower socioeconomic levels. Poor sleep and depression can be considered to be distinct implications of childbirth, but is there a relationship between the two? In a recent study, researchers at Druxel University found that mothers suffering from PPD slept less and took longer to fall asleep. Those with more serious PPD symptoms suffered from less healthy sleep patterns. The role of neurotransmitters affected by poor sleep in mood regulation may account for this relationship.

Infants can be negatively affected by the poor sleep and depression of their mothers, as they often adapt to the distorted circadian rhythm patterns and receive poorer quality of care. Clinicians believe that this negative cycle can be controlled if mothers receive help from family members to care for their infants and if they practice better sleep hygiene.

Reference:

Wiley-Blackwell (2008, December 24). Poor Sleep Quality Linked To Postpartum Depression. ScienceDaily. Retrieved January 4, 2009, from http://www.sciencedaily.com- /releases/2008/12/081210122236.htm.

MedBulletin

An Unethical Cure for Cancer?

MedBulletin by Ahmad Al-Khatib

Doctors from University College London have successfully delivered the first baby girl in the United Kingdom to have been tested before conception for a genetic form of breast cancer. The father of the child, who wishes to remain anonymous, came from a family line that has suffered for three generations from breast cancer; his grandmother, mother, sister and cousin were all diagnosed in their 20's. Doctors at the university used pre-implantation genetic diagnosis (PGD) to screen the embryo for an altered *BRCA1* gene, which would have given his daughter an 80% chance of also developing the disease. The gene normally codes for a protein that helps stop cancer before it begins to proliferate. However, the variation carried in the husband's genome works to greatly increase the risk of mutation.

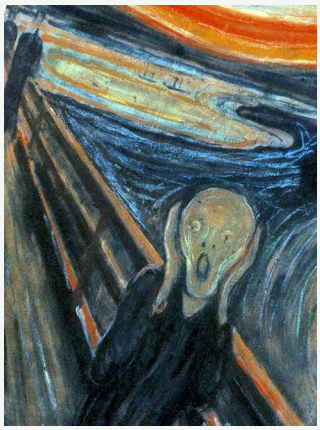
Though PGD has the potential for eliminating hereditary diseases, it has been severely criticized by ethics groups. The procedure involves testing cells from an embryo at the eight-cell stage of development for any rogue genes, such as the *BRCA1 gene*. If the embryo is found to be a carrier, it is discarded. As a result, Josephine Quintavalle of the campaign group Comment on Reproductive Ethics has claimed that "underlying all this is eugenics". The use of eugenics assumes an ethical philosophy that advocates the artificial evolution of human traits to favor "desired traits", while also eliminating hereditary diseases. Mrs. Quintavalle continues to comment that she hopes "20 years down the line we will have eradicated breast cancer – not eradicated the carriers."

Reference:

Health. 2009. Breast cancer gene-free baby born. [Online exclusive]. BBC News. Retrieved from http://news.bbc.co.uk/2/hi/health/7819651.stm.

A Way to Erase Bad Memories?

MedBulletin by Sangeeta Sutradhar



Researchers at Toronto's Hospital for Sick Children have developed a method to eradicate bad memories from one's brain. The investigators hope to apply their research on fear in mice to help humans erase bad memories before they cause post traumatic stress disorder. Although the actual incident that occurred would still remain intact in one's memory, a person would not be able to remember the fear he felt at the time, and would not associate the occurrence with the anxiety of the experience.

The cells in murien brains that store previously-experienced fear are located within the amygdala – a region of the brain that is associated with intense and instinctive emotions. The amygdala of a mouse functions very similarly to that of a human amygdala and contains analogous fear-storing neurons.

The researchers targeted a memory protein known as CREB, which is responsible for aiding brain cells create and lock memories. In this study, a virus triggered the CREB mechanism specifically in fear-storing neurons in the amygdala. The mice were then conditioned to fear the sound. Researchers then introduced a second virus that would target the neurons that expressed the CREB fear-storing mechanism, and would eradicate those neurons by making them susceptible to a diphtheria toxin that researchers would inject into the mice.

Targeting only these neurons that stored fear for that one incident guaranteed that the brain could still remember fear, not just for that specific recollection. In the future, researchers are hoping to find a way to prevent the CREB mechanism from creating more fearful memories in post-traumatic stress disorder patients.

Reference:

Hall, J. (2009, March 12). Erasing traumatic memory may be possible, researchers say. The Toronto Star. Retrieved March 12, 2009, from http://www.thestar.com/sciencetech/article/601208.

MedBulletin

Encouraging Insight into Forecasting Breast Cancer Recovery

MedBulletin by Keon Maleki

Researchers at Mount Sinai Hospital in Toronto have developed a tool named Dynamic Network Modularity (DyNeMo) that may provide the necessary information to predict the likelihood of recovery for breast cancer patients. DyNeMo examines protein interactions found within breast cancer tumours, and makes predictions on how the tumour will behave over a specific time span. Since proteins are connected in an informational network with cancer cells and other proteins, evaluating interactions originating from these proteins provides physicians with information from the source of the cancer.

A glimpse of hope in treating breast cancer may be derived directly from DyNeMo, as the program suggests that women who survive breast cancer possess an alternative configuration in their protein network within cancer cells, relative to women with breast cancer that ultimately becomes fatal. The researchers who developed this program stress that it should be used solely for the purposes of diagnosing patients and determining whether or not the tumour is likely to yield a positive outcome or a negative outcome. Furthermore, the developers maintain that DyNeMo is intended as an effective analytical tool for breast cancer patients and their oncologists. The researchers caution to reconsider the notion that the program may be useful in discovering possible treatments. DyNeMo surpasses other prognostic technologies is in its accuracy, and its effectiveness in predicting the onset of breast cancer in early stages. A genetic researcher at Harvard Medical School claims that their findings strongly suggest that genetic inheritance is not the most significant factor in breast cancer, but rather the configuration of genes that synthesize proteins; especially how those proteins interact with cancer cells. Ultimately, this discovery revolutionizes our knowledge of breast cancer.

Reference:

"New technology holds promise for predicting breast cancer recovery." CBC News. 2 February 2009. <http://www.cbc.ca/health/story/2009/02/02/breast-cancer-dynemo.html>.

Medicine, Psychology and Law

MedBulletin by Alyssa Cantarutti

The recent murder of a pastor in Illinois was blamed on the accused's deteriorating mental health. The defense stated that the accused had suffered from Lyme disease for many years and that this was the cause of his crime. However, infectious disease experts state that it is unlikely that Lyme disease can cause either violence or psychosis. Experts do admit that Lyme disease can have lingering neurological and psychological effects if left untreated, but no incidence of such extreme violence has ever been documented.

The judge and jury are faced with ethical questions in determining the extent to which the accused should be held criminally accountable for his actions. Did he commit the crime, or did he do so due to a psychotic episode? In general, some question the actual validity of this option in general, believing that whether or not an individual may have been experiencing psychosis, he or she is still a legitimate threat to society and should be dealt with accordingly.

A similar case was decided recently, involving Vincent Lee in the beheading of a Canadian man on a Greyhound bus. Although Lee was declared competent to stand trial, his lawyers were eventually successful in using a 'not criminally responsible' defense and Lee was sentenced accordingly.

Thus, it is evident that there are many possibilities for the outcome of this ethical dilemma and many differing opinions regarding the applicability of medicine and clinical diagnosis to law.

Reference:

DeNoon D. J. (2009). Lyme Disease and Violence: No link. WebMD: Health News. Retrieved http://www.webmd.com/news/20090310/lyme-disease-and-violence-no-link?src=RSS_PUBLIC